**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of

SKILLERMARK et al. Atty. Ref.: 4147-52; Confirmation No. 3042

Appl. No. 10/720,691 TC/A.U. 2617

Filed: November 25, 2003 Examiner: Doan, Kiet M.

For: SELECTIVE INTERFERENCE CANCELLATION

* * * * * * * * * * *

October 17, 2007

Box AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

**REQUEST FOR RECONSIDERATION AFTER FINAL**

Responsive to the final action dated July 18, 2007, Applicants respectfully request reconsideration.

Claims 1, 2, 6, 7, 11, and 12 stand rejected for obviousness under 35 U.S.C. §103 based on newly-cited Nagata and Demers. This rejection is respectfully traversed.

The independent claims increase the performance of a CDMA cellular system without requiring any changes to standard specifications or requiring additional signaling in the radio network. CDMA systems usually maintain a list of "intracell" interferers to the mobile station (i.e., interferers belonging to the same cell as the mobile and thus having the same scrambling code). But as the mobile station approaches the cell boundary, intercell interferers (i.e., interferers from one or more other cells having other scrambling codes) become stronger.

Conventional CDMA systems can not handle these interferers without changes to cellular communications standards and/or additional signaling. Neither change is desirable.

The inventors recognized that mobile terminals close to the cell boundaries are also close to performing a handover. In this case, these mobile terminals have already been instructed by the network to listen to the traffic in the neighboring cell(s), and as a result, have acquired handover information that is sufficient to identify intercell interferers that should be included in an interference canceling joint detection (JD) algorithm in the mobile terminal. No standard change or additional signaling is necessary.

The claims in this case are directed to interference cancellation by a mobile terminal in a CDMA network. The mobile terminal maintains a list of intracell interferers in the CDMA cellular system that interfere with the mobile terminal. The mobile terminal also detects intercell interferers that interfere with the mobile terminal based on handover-related information determined by the mobile terminal. One or more detected intercell interferers is added by the mobile to its list. Based on information associated with the interferers in that list, the mobile terminal performs interference cancellation for all the interferers in that list. The inter-cell interference can originate from a neighboring base station or from another mobile terminal. The latter case may happen in a TDD system when uplinks and downlinks are not coordinated across cells. So both base station-to-mobile terminal and mobile terminal-to-mobile terminal inter-cell interference can be accounted for and canceled by the mobile terminal.

Nagata is not directed to interference cancellation. In fact, neither "interference" nor "cancellation" is found in the Nagata reference. Instead, Nagata is focused on handover based on uplink measurements. Nagata tries to estimate the possible gain by connecting the mobile terminal to several sectors within the same site (softer handover or micro diversity), in which

case maximum ratio combining is used, or the possible gain by connecting the mobile terminal to several cells in different sites (soft handover or macro diversity), in which case selection combining is used. Diversity handover and interference cancellation are different technologies. The Examiner is requested to explain how Nagata describes an interference cancellation method.

The Examiner contends that Nagata describes a mobile terminal maintaining a list of intracell interferers to that mobile. Applicants disagree. First, Nagata discloses a *base station* receiving from a mobile a list of pilot signals transmitted by base stations from different cells. and not a mobile station. The mobile detects the pilot signals from the cells to compile the list sent to the base station. See, e.g., 0007 and Figures 1 and 6 in Nagata which illustrate a base station. But in the independent claims, the mobile station maintains the list rather than sending it to the base station to maintain. Second, the pilot signals in Nagata are not *intracell* interfering interferers. In Nagata, the pilot signals represent handover candidates rather than interferers. But even if one viewed the pilot signals as interference, those pilot signals are *intercell* interfering signals because each pilot comes from a different base station cell. There is no teaching of maintaining a list of intracell interferers. The Examiner fails to recognize these additional deficiencies in Nagata or explain how Demers teaches these missing features.

The Examiner admits that Nagata also lacks a mobile station that:

- detects intercell interferers to the mobile station based on handover-related information determined by the mobile station;
- adds one or more detected intercell interferers to the list; and
- performs, based on information associated with the interferers in said list, interference cancellation for all interferers in the list.

Demers describes a base station canceling uplink (from mobile-to-base station) interference. Mobile terminals measure the signal strength from a serving and a neighboring base station and reports thee measurements to its serving base station. The serving base station estimates whether this mobile terminal will significantly interfere with any other neighboring base station. If so, then the serving base station sends a message to inform the neighboring base station via the transport network. The neighboring base station can then perform interference cancellation on the signal that originates from this mobile terminal.

Demers only teaches uplink interference cancellation implemented in the base station. Demers does not describe downlink interference cancellation implemented in the mobile terminal. Consequently, both Nagata and Demers fail to disclose a *mobile station* with a "means for detecting intercell interferers *to the mobile station* based on handover-related information determined by the mobile station." Quoted from claim 11. Nor does either reference teach a *mobile station* with a "means for performing, based on information associated with the interferers in said list, interference cancellation for all interferers in said list." Quoted from claim 11. Dremers performs intercell interference cancellation at a base station and only cancels uplink intercell interference. Consequently, the combination of Nagata and Dremers fails to perform interference cancellation in a mobile terminal to cancel interference to that mobile station from both intracell and intercell interferers included in the mobile's list.

Dremers also teaches away from the claimed technology. As explained above, the inventors developed technology that would not require additional signaling to cancel both intracell and intercell interference at the mobile station. Dremers' interference cancellation technique, implemented at a base station rather than a mobile station, requires signaling between

mobiles and base stations and also between base stations. But this additional signaling is just what the inventors sought to avoid.

The application is in condition for allowance. An early notice to that effect is earnestly solicited.

Respectfully submitted,

**NIXON & VANDERHYE P.C.**

By: _____
John R. Lastova
Reg. No. 33,149

JRL:maa
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100